

WHAT IS CLAIMED IS:

1. An enhanced Compton gamma camera used in nuclear medicine,  
comprising:  
5 a plurality of radiation detector modules, wherein each module includes:  
at least one edge-on radiation detector,  
a communication link for transferring data between the module and a  
computer system.
2. The enhanced Compton gamma camera of Claim 1 wherein detector  
10 modules includes strip radiation detectors.
3. The enhanced Compton gamma camera of Claim 1 wherein detector  
modules includes edge-on radiation detectors with different properties.
4. The enhanced Compton gamma camera of Claim 1 wherein detector  
modules have different properties.
- 15 5. The enhanced Compton gamma camera of Claim 1 wherein the edge-on  
radiation detector is a dual-sided parallel strip detector.
6. The enhanced Compton gamma camera of Claim 1 wherein the edge-on  
radiation detector is a dual-sided crossed strip detector.
7. The enhanced Compton gamma camera of Claim 1 wherein the edge-on  
20 radiation detector is a 2-D pixelated array detector.
8. The enhanced Compton gamma camera of Claim 1 wherein detectors are  
stacked.

9. The enhanced Compton gamma camera of Claim 8 wherein the detector layers use at least two different materials.

10. The enhanced Compton gamma camera of Claim 1 wherein edge-on detectors and detector modules can be adjusted.

5 11. The enhanced Compton gamma camera of Claim 10 wherein near-edge-on imaging is implemented.

12. The enhanced Compton gamma camera of Claim 1 comprising:  
a coarse Compton collimator mounted on the enhanced Compton gamma camera such that it restricts the acceptance angle of incident radiation.

10 13. The coarse Compton collimator of Claim 12 wherein a radiation shield covers specific edge-on radiation detectors.

14. The enhanced edge-on Compton gamma camera of claim 1 wherein the camera is used to detect radiation.

15 15. The enhanced Compton gamma camera of Claim 1 wherein the camera operates as an enhanced edge-on Gamma camera.

16. The enhanced edge-on gamma camera of Claim 15 wherein the camera operates as an enhanced edge-on PET camera.

17. The enhanced edge-on gamma camera of claim 15 wherein the camera is used to detect radiation.

20 18. The enhanced edge-on gamma camera of claim 15 wherein the camera is used for radiographic imaging.

19. The enhanced edge-on gamma camera of claim 15 wherein the camera is used for radiographic CT imaging.

20. The enhanced edge-on Compton gamma camera of claim 1 wherein the camera is irradiated from the side.

5

10

15

20